List of Claims:

1. (currently amended) A method of improving synthesized speech quality in a speech coding system including an encoder and a decoder, said method comprising:

obtaining an input speech signal by said encoder;

coding said input speech signal by said encoder using a Code Excited Linear Prediction (CELP) coder to generate CELP coding parameters for synthesis of said input speech signal;

generating a plurality CELP speech frames by said encoder, each of said plurality CELP speech frames including said CELP coding parameters;

creating a plurality of voicing indexes by said encoder, wherein each of said plurality of voicing indexes is derived from a normalized pitch correlation parameter Rp, where $-1.0 < Rp < 1.0$, and each of said plurality of voicing indexes is indicative of one of a plurality of classes of said input speech signal, wherein each of said plurality of classes of said input speech signal represents a different degree of periodicity of said input speech signal, wherein said plurality of classes of said input speech signal include a background noise class, an unvoiced class, a first voiced class, a second voiced class, wherein said first voiced class has a lower degree of periodicity than said second voiced class; and

transmitting each of said plurality of voicing indexes as part of each of said plurality of CELP speech frames by said encoder to said decoder for enhancing said synthesis of said input speech signal.

2. (cancelled)

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3. (previously presented) The method of claim 1, wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling an adaptive highpass filter by said decoder.

4. (previously presented) The method of claim 1, wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling an adaptive perceptual weighting filter by said decoder.

5. (previously presented) The method of claim 1, wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling an adaptive Sinc window by said decoder.

6. (previously presented) The method of claim 1, wherein said at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling a spectrum tilt of said input speech signal by short-term enhancement of a fixed-codebook by said decoder.

7. (previously presented) The method of claim 1, wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling a perceptual weighting filter by said decoder.

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8. (previously presented) The method of claim 1, wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling a linear prediction coder by said decoder.

9. (previously presented) The method of claim 1, wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling a pitch enhancement fixed-codebook by said decoder.

10. (previously presented) The method of claim 1, wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for by controlling a post pitch enhancement by said decoder.

11. (previously presented) The method of claim 1, wherein at least one of said plurality of voicing indexes is for use by said decoder to select at least one sub-codebook from a plurality of sub-codebooks.

12. (currently amended) A method of improving synthesized speech quality in a speech coding system including an encoder and a decoder, said method comprising:

receiving a plurality of Code Excited Linear Prediction (CELP) speech frames by said decoder from said encoder;

obtaining a plurality of CELP coding parameters by decoding each of said plurality of

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CELP speech frames by said decoder;

obtaining a plurality of voicing indexes by decoding each of said plurality of CELP speech frames by said decoder for use by said decoder for enhancing synthesis of said input speech signal, wherein each of said plurality of voicing indexes is derived from a normalized pitch correlation parameter $R_p$, where $-1.0 < R_p < 1.0$, and each of said plurality of voicing indexes is indicative of one of a plurality of classes of said input speech signal, wherein each of said plurality of classes of said input speech signal represents a different degree of periodicity of said input speech signal, and wherein said plurality of classes of said input speech signal include a background noise class, an unvoiced class, a first voiced class, a second voiced class, wherein said first voiced class has a lower degree of periodicity than said second voiced class; and

generating a synthesized version of said input speech signal using said plurality of CELP coding parameters and said plurality of voicing indexes by said decoder.

13. (cancelled)

14. (previously presented) The method of claim 12, wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling an adaptive highpass filter by said decoder.

15. (previously presented) The method of claim 12, wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling an adaptive perceptual weighting filter by said decoder.

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16. (previously presented) The method of claim 12, wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling an adaptive Sinc window for pitch contribution by said decoder.

17. (previously presented) The method of claim 12, wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling a spectrum tilt of said input speech signal by short-term enhancement of a fixed-codebook by said decoder.

18. (previously presented) The method of claim 12, wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling a linear prediction coder filter by said decoder.

19. (previously presented) The method of claim 12, wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling a pitch enhancement fixed-codebook by said decoder.

20. (previously presented) The method of claim 12, wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling a post pitch enhancement by said decoder.

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21. (previously presented) The method of claim 12, wherein said decoder uses at least of said plurality of said voicing indexes selects at least one sub-codebook from a plurality of sub-codebooks.

22. (currently amended) An encoder for improving synthesized speech quality of an input speech signal, said encoder comprising:

a receiver configured to receive said input speech signal by said encoder;

a Code Excited Linear Prediction (CELP) coder configured to generating CELP coding parameters for synthesis of said input speech signal, configured to generate a plurality CELP speech frames, each of said plurality CELP speech frames including said CELP coding parameters, and further configured to create a plurality of voicing indexes, wherein each of said plurality of voicing indexes is derived from a normalized pitch correlation parameter Rp, where $-1.0 < Rp < 1.0$, and each of said plurality of voicing indexes is indicative of one of a plurality of classes of said input speech signal, wherein each of said plurality of classes of said input speech signal represents a different degree of periodicity of said input speech signal, and wherein said plurality of classes of said input speech signal include a background noise class, an unvoiced class, a first voiced class, a second voiced class, wherein said first voiced class has a lower degree of periodicity than said second voiced class;

a transmitter configured to transmit each of said plurality of voicing indexes as part of each of said plurality of CELP speech frames by said encoder to a decoder for use in enhancing said synthesis of said input speech signal.

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23. (cancelled)


24. (previously presented) The encoder of claim 22, wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling an adaptive highpass filter by said decoder.


25. (previously presented) The encoder of claim 22, wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling an adaptive perceptual weighting filter by said decoder.


26. (previously presented) The encoder of claim 22, wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling an adaptive Sinc window by said decoder.


27. (previously presented) The encoder of claim 22, wherein at least one of said plurality of voicing indexes is for use by said decoder to selects at least one sub-codebook from a plurality of sub-codebooks.


28. (currently amended) A decoder for improving synthesized speech quality of an input speech signal, said method comprising:

a receiver configured to receive a plurality of Code Excited Linear Prediction (CELP)

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speech frames from an encoder based on said input speech signal,

wherein said decoder obtains a plurality of CELP coding parameters by decoding each of

said plurality of CELP speech frames, and wherein said decoder obtains a plurality of voicing

indexes by decoding each of said plurality of CELP speech frames, each of said plurality of

voicing indexes being derived from a normalized pitch correlation parameter Rp, where $-1.0 <$

$Rp < 1.0$, and each of said plurality of voicing indexes being indicative of one of a plurality of

classes of said input speech signal, wherein each of said plurality of classes of said input speech

signal represents a different degree of periodicity of said input speech signal, wherein said

decoder generates a synthesized version of said input speech signal using said plurality of CELP

coding parameters and said plurality of voicing indexes, and wherein said plurality of classes of

said input speech signal include a background noise class, an unvoiced class, a first voiced class,

a second voiced class, wherein said first voiced class has a lower degree of periodicity than said

second voiced class.


29. (cancelled)


30. (previously presented) The decoder of claim 28, wherein at least one of said plurality

of voicing indexes provides information from said encoder to said decoder for controlling an

adaptive highpass filter by said decoder.


31. (previously presented) The decoder of claim 28, wherein at least one of said plurality

of voicing indexes provides information from said encoder to said decoder for controlling an

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adaptive perceptual weighting filter by said decoder.

32. (previously presented) The decoder of claim 28, wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling an adaptive Sinc window for pitch contribution by said decoder.

33. (previously presented) The decoder of claim 28, wherein said decoder uses at least of said plurality of said voicing indexes selects at least one sub-codebook from a plurality of sub-codebooks.

34. (previously presented) The method of claim 1, wherein each of said plurality of voicing indexes has a plurality of bits indicative of a classification of each frame of said plurality of CELP speech frames.

35. (original) The method of claim 34, wherein said plurality of bits are three bits.

36. (original) The method of claim 34, wherein said classification is indicative of periodicity of said input speech signal.

37. (previously presented) The method of claim 12, wherein each of said plurality of voicing indexes has a plurality of bits indicative of a classification of each frame of said plurality of CELP speech frames.

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38. (previously presented) The method of claim 37, wherein said plurality of bits are three bits.

39. (previously presented) The method of claim 37, wherein said classification is indicative of periodicity of said input speech signal.

40. (previously presented) The encoder of claim 22, wherein each of said plurality of voicing indexes has a plurality of bits indicative of a classification of each frame of said plurality of CELP speech frames.

41. (previously presented) The encoder of claim 40, wherein said plurality of bits are three bits.

42. (previously presented) The encoder of claim 40, wherein said classification is indicative of a noisy speech signal.

43. (previously presented) The decoder of claim 28, wherein each of said plurality of voicing indexes has a plurality of bits indicative of a classification of each frame of said plurality of CELP speech frames.

44. (previously presented) The decoder of claim 40, wherein said classification is

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indicative of a periodic index.

45. (previously presented) The decoder of claim 40, wherein said periodic index ranges from a low periodic index to a high periodic index.

46. (new) The method of claim 1, wherein said plurality of voicing indexes are used in place of pitch gain for post pitch enhancement.

47. (new) The method of claim 5, wherein said plurality of voicing indexes are used to control a modification to a low pass filter for said Sinc window.

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